

HEPATIC ESTEATOSIS AND ITS RELATIONSHIP WITH THE METABOLIC SYNDROME



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Background:

Hepatic steatosis (HS) is a frequent finding in obese children with prevalence is variable (8-10%). Different authors consider the HS like the hepatic component of MS, as these variables are presented in this one. Insulin resistance, hypertriglyceridemia and abdominal circumference (AC) are known risk factors, similar to Metabolic Syndrome (MS), but the precise pathophysiology remains unexplained.

Objective and hypotheses:

To analyze the prevalence of HS as identified by ultrasound as well as acanthosis nigricans (AN) in two groups of obese patients; with or without presence of MS; by studying anthropometric, analytical characteristics and waist-length ratio (WLR). Identify the correlation between Hs and Ms.

Material and Method:

In this cross-sectional study, 190 children aged 5-14 with BMI >2SD were evaluated from 1st May 2013 to 30st May 2015 whilst in attendance at the Paediatric Endocrinology Service of our Hospital.

Those patients with secondary causes of obesity have been excluded

as HS due to other causes. We analyze somatometry, family history/biochemical parameters (fasting glucose, fasting insulin, lipid profile, hepatic liver profile, HOMA, uric acid), as well as the presence or absence of acanthosis nigricans (AN) in both

groups. Liver ultrasound was performed to define the presence or absence of steatosis and we have followed the classification IDF, to define the presence of MS in patients older than 11 years of age. All patients underwent an oral glucose tolerance test (OGTT). The statistical analysis was performed in SPSS 17.

Results:

The cohort of 190 patients was equally weighted with respect to sex. 70 presented with Hepatic steatosis (36.8%) and was more frequent in males than females (60% vs 40%). Metabolic criteria of MS are presented in the 20% of population. The criteria was presented in the 36% (n = 25) of patients with HS vs 11% without HS (n = 13).

There is a positive correlation (R = 0.78) between patients with metabolic syndrome and hepatic steatosis (p < 0.05). There is a negative correlation (R = -0.22) between patients without steatosis.

| | HEPATIC STEATOSIS | WITHOUT HEPATIC STEATOSIS | |
|-----------------|-------------------|---------------------------|---------|
| N | 70 | 120 | |
| AGE (years) | 13 +/-1,7 | 10,4+/-1,5 | P<0,05 |
| BMI(Kg/m2) | 31,7 +/-2,2 | 26,7+/- 1,3 | P<0,005 |
| SD OF BMI | 4,6 | 3,1 | P<0,05 |
| AC (cm) | 100+/-8 | 90+/-15 | P<0,005 |
| INSULIN(mUI/ml) | 18,5+/-3,5 | 14+/-5,5 | P<0,05 |
| HOMA | 3,8+/-1,5 | 2,8+/-1,1 | P=0,003 |

| | HEPATIC STEATOSIS | WITHOUT HEPATIC STEATOSIS | |
|----------------------|-------------------|---------------------------|-----------------|
| N | 70 | 120 | |
| CHOLESTEROL(mg/dl) | 160+/-20 | 157+/-17 | Non significant |
| HDL (mg/dl) | 39+/-4 | 48,8+/-3,8 | P=0,003 |
| TRIGLICERIDES(mg/dl) | 153+/-6,4 | 74+/-5,3 | P<0,005 |
| URIC ACID(mg/dl) | 5,9+/-0,2 4 | 4+/-0,1 | P=0,005 |
| GOT (U/L) | 40+/-4,7 | 26+/-2 | P<0,005 |
| GPT (U/L) | 39+/-3,8 | 37+/-1,5 | P<0,05 |
| ACANTHOSIS NIGRICANS | 80% | 20% | P<0,001 |
| WAIST LENGTH RATIO | 0,78+/-0,1 | 0,55+/-0,2 | P<0,05 |

Conclusion:

The prevalence of Hepatic Steatosis in our population is higher than previously published. Our results show that Hepatic Steatosis is related to BMI, AC, hypertriglyceridemia, waist length ratio and HOMA index. We observed a higher waist-length ratio in the population with Hepatic Steatosis and a higher incidence of Metabolic Syndrome. Acanthosis Nigricans is also more prevalent in those patients with Hepatic Steatosis. There is a correlation between Hepatic Steatosis and Metabolic Syndrome. We believe that Hepatic Steatosis would be the hepatic manifestation of Metabolic Syndrome.

